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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,757	03/31/2004	Philip Derbeko	RADSA 21.075 (101120-0005)	5259
26304 7590 10/22/2007 KATTEN MUCHIN ROSENMAN LLP 575 MADISON AVENUE NEW YORK, NY 10022-2585			EXAMINER PATEL, KAUSHIKKUMAR M	
			ART UNIT 2188	PAPER NUMBER
			MAIL DATE 10/22/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/813,757	Applicant(s) DERBEKO, PHILIP	
	Examiner Kaushikkumar Patel	Art Unit 2188	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,5,9-14,16-18,22,26-31,33-40,42,43,45,46,49 and 50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,5,9-14,16-18,22,26-31,33-40,42-43,45-46 and 49-50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This office action is in response to applicant's communication filed August 15, 2007 in response to PTO office action mailed May 2, 2007. The applicant's remarks and amendments to the claims were considered with the results that follow.
2. In response to last office action, claims 1, 18, 22, 26-31, 33-35 and 48 have been amended. No claims have been canceled. No claims have been added. As a result, claims 1, 5, 9-14, 16-18, 22, 26-31, 33-40, 42-43, 45-46 and 49-50 remain pending in this application.

Response to Arguments

3. A declaration filed on August 15, 2007 by Gadi Erlich under 37 C.F.R. 1.131 has been fully considered but is ineffective to overcome the Lam reference (US 2005/0172092).
4. Based on evidence supplied, it appears that applicant is relying on A) conception prior to the effective date of reference, followed by diligence until US filing date of the application.
5. Referring to MPEP 715.07,

"A general allegation that the invention was completed prior to the date of the reference is not sufficient. Ex parte Saunders, 1883 C.D. 23, 23 O.G. 1224 (Comm'r Pat. 1883). Similarly, a declaration by the inventor to the effect that his or her

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invention was conceived or reduced to practice prior to the reference date, without a statement of facts demonstrating the correctness of this conclusion, is insufficient to satisfy 37 CFR 1.131."

"The affidavit or declaration and exhibits must clearly explain which facts or data applicant is relying on to show completion of his or her invention prior to the particular date. Vague and general statements in broad terms about what the exhibits describe along with a general assertion that the exhibits describe a reduction to practice "amounts essentially to mere pleading, unsupported by proof or a showing of facts" and, thus, does not satisfy the requirements of 37 CFR 1.131(b). In re Borkowski, 505 F.2d 713, 184 USPQ 29 (CCPA 1974). Applicant must give a clear explanation of the exhibits pointing out exactly what facts are established and relied on by applicant. 505 F.2d at 718-19, 184 USPQ at 33. See also In re Harry, 333 F.2d 920, 142 USPQ 164 (CCPA 1964) (Affidavit "asserts that facts exist but does not tell what they are or when they occurred.")"

Applicant appears to be relying on conception, reduction to practice and diligence prior to the effective date of reference by asserting:

10-19-07
"On May 9, 2003 Mr. Derba~~to~~ provided me with a presentation (Attached as Exhibit A) entitled "Journaling" detailing the invention. This presentation served as an invention disclosure statement".

"After review of the presentation, I directed the presentation to be forwarded to counsel for Sanrad, Ltd., for preparation of a patent application. The agents of Sanrad, Ltd., acted diligently from prior to May 9, 2003 unit to filling of U.S. Application Serial No. 10/813,757 on March 31, 2004 to develop the invention and process and prepare the application."

This is found to be merely a general assertion that the exhibit describes invention, but it merely presents presentation of a very broad concept of "Journaling" with "mirroring" and it does not provides facts relating to claimed invention or proper reduction to practice.

Accordingly, the rejection of claims is maintained and reiterated below for applicant's convenience.

Admitted Prior Art

6. Applicant has not traversed the Examiner's assertion of Official Notice with regards to the rejection of claims 36, 37 and 38 in previous office action, therefore the well-known facts presented in these rejections are taken to be admitted prior arts. These facts are summarized as follows: "uses of tape libraries as backup devices and RAID for data redundancies are well known in the art".

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 5, 9-14, 16-18, 22, 26-31, 33-40, 42, 45-46 and 49-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lam et al. (US 2005/0172092 A1),

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Applicant's Admitted Prior Art (incorporating Armangau (US 6,434,681 B1)) (AAPA herein after) and Cabrera et al. (US 6,708,227).

As per claim 1, Lam teaches a method for enabling the execution of at least an I/O operation by at least a host on at least a production storage element (**fig. 1, client may transmit to primary storage system one or more data write commands,** paragraph [0031]); said method comprises the steps of:

a) on-line performing a write request initiated by said host by writing a data chunk to a journal (**storage manager receives from client a data write command containing a data item and inserts the data item into staging device (journal), although Lam does not explicitly teach on-line, it is inherent in the system of Lam the write task is performed and the data is stored in the staging device and host is acknowledged of write completion is equivalent to on-line write {paragraphs [0052] and [0060]}, because after sending write complete acknowledgment, the storage manager processes additional data processing requests from clients {paragraph [0008] and [0052]}, and saving a destination address designated in said write request in a changes table {par. [0049], [0052] and [0060]}, storage manager inserts the data item into staging storage device along with the metadata, where it is readily apparent that metadata includes destination address and it is also known in the systems where data caching is used, the cache (staging device) includes a changes table to mark data in the cache as valid, invalid etc. to keep the data coherent with the data stored in the disk), wherein while on-line performing said write request the host is idle (additional data processing requests from client**

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are processed only after the write complete has been transmitted to client, where it is readily apparent that the client waits until the write complete acknowledgement is received and thus the client is idle during writing data to staging device and up until the acknowledgement is received, {par. [0052]}};

b) generating a response message ending the execution of said write request and thereby enabling said host to execute said I/O operations (**storage manager transmits a write complete message to the client, {paragraphs [0052] and [0060]}.** Lam teaches asynchronous writing method in a default mode {par. [0060]} and in asynchronous writing the data is written to cache (staging device) and then when host receives an acknowledgement of write complete, then the host is free to perform additional I/O operations and does not wait for acknowledgment for data written in the disk devices at a later time).

Lam teaches copying (back up) user data from staging (journal) device to primary and secondary storage devices (pars. [0053], [0060]), but fails to teach producing snapshot copy of primary device. AAPA teaches that backup and snapshot are two techniques for increasing data reliability in storage systems and snapshot saves original copy of data before data being modified and thus preserves the original data to different/same storage device such that if the original data is corrupted then data is quickly restored to point-in-time just before the data corruption has occurred. (AAPA, page 1, paragraph 3). Cabrera also teaches that snapshot may be used like a backup copy of a volume, but it is much faster to create than a full backup (Cabrera, col. 2, lines 48-55) and it is less resource intensive backup process (Cabrera, col. 2, lines 12-16).

It would have been obvious to one having ordinary skill in the art at the time of the invention to use snapshot technique as taught by AAPA in the system of Lam because snapshot saves original data to different/same storage device before being modified, thus providing point-in-time recovery of data (AAPA, page, paragraph 3) and snapshots are much faster to create and less resource intensive, thus improving backup capabilities of storage system (Cabrera, col. 1, line 67 – col. 2, line 57).

Thus, Lam, AAPA (incorporating Armangau (US 6,434,681 B1) and Cabrera combine teach:

c) off-line producing said updated snapshot copy of said production storage element by copying a data chunk residing in said production storage element designated by a destination address to a location designated by the destination address in a snapshot storage element; and copying said new data chunk from said journal to a location designated by said destination address in said production storage element (Armangau, col. 2, lines 11-34, **it is noteworthy though, Armangau teaches host writing data to production storage and does not mention host writing data to journal device (or cache), he teaches cached storage system (Armangau, col. 8, lines 57-58) and data is cached, i.e. host accesses data to/from cache and then at some point in time data is flushed/written back to storage (primary) device and thus the meaning when host writes data to primary storage device can be interpreted as host initially writes data to cache and then when data is flushed (write-back), the original data chunk is read from production volume and written to snapshot volume and new/modified/dirty data is written in place of original data**

[Armangau, col. 10, lines 50-65, *"when port adapter receives a data storage access request from one the hosts", "the port adapter accesses primary directory in the cache and determines whether or not the data resides in the cache". "The storage device also performs a write-back operation to ensure that data is written to the cache memory eventually becomes written to the disk array"}}*];

wherein while off-line producing said updated snapshot copy said host is released to handle said I/O operations (Lam teaches sending write complete acknowledgement to client after writing data and later it writes data to primary and backup devices (Lam, par. [0052], [0060]), thus it is readily apparent that when host receives an acknowledgment after writing data to staging device, the host is free to handle additional I/O operations).

As per claim 5, Lam teaches staging device as non-volatile memory (paragraph [0035]).

Claims 18 and 35 are rejected under same rationales as applied to claim 1 above (Lam teaches method can be performed by programmed processors executing blocks, par. [0099]).

Claims 22 and 39 are rejected under same rationales as applied to claim 5 above.

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As per claim 49 Lam teaches sending a write complete acknowledgment to host as explained with respect to claim 1 above, which means ending the execution of write request.

As per claims 9, 26 and 50, Armangau (AAPA) teaches checking of data chunk to see if data chunk is modified since last snapshot and if data chunk is not modified than copies data chunk from production volume to snapshot volume (see Armangau, column 2, lines 12-34).

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify Lam's storage system by teachings of Armangau to check the data chunk for modification and copying data from primary to snapshot volume by doing one can restore the previous data from snapshot volume if there is any fault or interruption in system and also one can create point-in-time backup copies.

Armangau fails to teach copying new data chunk to production storage if data chunk has been modified. It would have been obvious to one having ordinary skill in the art to write data chunk directly to production storage if data chunk was modified after snapshot, because once snapshot is taken than the original data is already saved to snapshot device and thus if data corruption occurs during overwriting modified data to production storage, the original data still be recovered from snapshot device (well known benefit of snapshot).

As per claims 10, 11, 27 and 28, Lam teaches metadata of data item, which contains identification for assigned data block storage location (paragraph [0031]) and converting logical address to physical address (paragraph [0043]).

As per claims 36, 37 and 38, Lam teaches that primary and backup devices with disks (paragraph [0032]) and virtual drives (paragraph [0042]), thus Lam inherently teaches storage elements with disk and either physical or virtual volumes. Lam fails to teach tape libraries but uses of tape libraries as backup devices and RAID for data redundancies are well known in the art and Examiner takes official notice of that.

With respect to claims 12-14 and 16-17, Armangau teaches a cached storage subsystem (Armangau, col. 8, lines 57-58) and teaches:

- a) checking if data chunk requested to be read resides in said journal (cache);
 - b) retrieving said data chunk from said journal (cache) and further sending said data chunk to said host, if said data chunk resides in said journal (cache); and
 - c) retrieving said data chunk from said production storage device and further sending said data chunk to said host, if said data chunk does not reside in said journal (cache)
- (claim 13) (Armangau, col. 10, lines 50-67). Lam teaches host access request including metadata as explained with respect claim 1 above and virtual storage devices (Lam, par. [0042]) and performing logical to physical address conversion in case of virtual volume as per claim 11 above. It is inherent feature of read request to include source address of the data block to be read thus satisfying limitations of claims 12, 16 and 17.

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Armangau teaches checking directory entry (Armangau, col. 10, lines 52-55) satisfying limitation of claim 14.

Claims 29-31, 33-34, 40 and 45-46 are rejected under same rationales as applied to claims 12-14 and 16-17 above.

With respect to claim 42, Armangau teaches a storage controller (Armangau, col. 10, line 33).

9. Claim 43 is rejected under **35 U.S.C. 103(a)** as being unpatentable over Lam et al. (US 2005/0172092 A1), AAPA/Armangau (US 6,434,681 B1) and Cabrera et al. (US 6,708,227) as applied to claim 35 above and further in view of Kumar et al. (US 2003/0131182 A1).

As per claim 43, Lam, AAPA/Armangau and Cabrera fail to teach virtualization switch in storage area network (SAN). Kumar teaches benefit of storage virtualization (Kumar, par. [0005]) and implementing virtualization in storage area networks through various devices (e.g. at host, at storage adapters and switches) (Kumar, pars. [0006] – [0007]). It would have been obvious to one having ordinary skill in the art at the time of the invention to use virtualization switch as taught by Kumar in the system of Lam, AAPA/Armangau and Cabrera because a network appliance placed between host and the storage device (i.e. a switch) globally manages the mapping allocation between virtual and physical devices and thus virtual volumes can be implemented

independently from both the host and the storage subsystem thereby providing higher level of security (Kumar, par. [0010]).

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaushikkumar Patel whose telephone number is 571-272-5536. The examiner can normally be reached on 8.00 am - 4.30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hyung Sough can be reached on 571-272-6799. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



kmp

Kaushikkumar Patel
Examiner
Art Unit 2188


HYUNG SOO
SUPERVISORY PATENT EXAMINER

10/19/07